CLAIMS:

1. A method of generating a random binary waveform containing events which occur at random intervals, the method comprising deriving, from a physical noise source, a first preliminary signal containing events occurring asynchronously and at random intervals and multiplying the first preliminary signal with at least one further preliminary signal containing further events occurring at random intervals so as to intersperse the events.

2. A method as claimed in claim 1, wherein the first preliminary signal is derived by level-detecting a random amplitude analog signal produced by the physical noise source.

3. A method as claimed in claim 2, wherein at least one further preliminary signal is derived by level-detecting said random amplitude analog signal.

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4. A method as claimed in any preceding claim, wherein the preliminary signals are combined by analogue multiplication.

5. A method as claimed in any one of claims 1 to 3, wherein the preliminary signals are binary signals which are combined by binary multiplication.

6. A method as claimed in claim 5, wherein the preliminary signals are combined by an Exclusive-OR operation.

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7. A method as claimed in any preceding claim, wherein the physical noise source produces a non-deterministic output.

8. A method as claimed in one of claims 1 to 6, wherein the physical noise source produces a chaotic output.

9. A method as claimed in any preceding claim, wherein at least one further preliminary signal is a pseudo-random binary sequence.

10. A method as claimed in any preceding claim, wherein at least one further preliminary signal is a chaotic signal.

11. A method as claimed in any preceding claim, wherein at least one of the preliminary signals is a time-delayed version of another of the preliminary signals.

12. A method as claimed in claim 11, wherein the time delay has a value such that the correlation function of said one preliminary signal for that value is substantially zero.

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13. A method as claimed in any preceding claim, including producing a signal from said physical noise source and applying a spectral filter to the signal in order to obtain said first preliminary signal.

14. A method as claimed in any preceding claim, wherein the number of preliminary signals is equal to 3 or 4.

15. A method of detecting objects comprising measuring the delay between transmission of a signal modulated by a random binary waveform generated by a method according to any preceding claim and receipt of the reflection of the signal from the object.

16. Apparatus for generating a random binary waveform containing events which occur at random intervals, the apparatus comprising:

a physical noise source producing a random output signal;

means for deriving, from said random output signal, a first preliminary signal containing events occurring asynchronously at random intervals;

means for providing at least one further preliminary signal containing further events occurring at random intervals; and

means for multiplying the first preliminary signal and said at least one further preliminary signal so as to produce a random binary waveform in which said events are interspersed.